

**Weeks Bay National Estuarine Research Reserve  
2010 Needs Assessment Report for Jackson County, MS Schools  
July 2010**

## **1. Project Background**

Three situations or factors lead to this addendum to the 2009 Weeks Bay Needs Assessment process. The first situation was that, during the 2009 needs assessment, the Jackson County, Mississippi public and private schools were approached for inclusion in the needs assessment. At the time both systems, public and private, declined to participate in the survey. Lack of time was the dominant reason for the decline. A second factor emerged as the survey responses were collected and analyzed. The final count of the middle and high school science teacher respondents indicated that a statistically significant response number was not attained. The third emerging situation focused on the inclusion of required survey questions developed at the federal government level for needs assessment conducted throughout the NERR system. Although Weeks Bay had conducted its needs assessment prior to the finalization of the required questions, the decision was made to re-approach the Mississippi cohort to encourage them to participate in a second round of survey administration to accomplish two objectives: 1) field test the required questions in order to establish validity and reliability of the survey items prior to administration by other NERR projects; and 2) attempt to collect enough middle and high school survey responses to collect a statistically significant sample size. The survey distribution was limited to middle and high school science teachers in Jackson County, Mississippi, since a statistically significant sample size was achieved in the elementary school cadre. Seventy-seven additional responses were needed to accomplish the second objective. A total of 54 Mississippi teachers responded to the survey, failing to meet the required sample size.

## **2. Needs Assessment Process**

The Mississippi needs assessment process was identical to the Alabama/Florida process discussed earlier in this report. The survey items were changed slightly to reflect the exact wording of the seven required questions. An additional question was added to collect additional data on the use of real-time/near-time data streams. Table 1 displays a comparison of the Alabama/Florida and Mississippi survey item sets.

**Table 1. Comparison of Survey Item Sets, Alabama/Florida Cadre and Mississippi Cadre**

<b>Survey Item</b>	<b>Asked in the . . .</b>		<b>NERR Required Question</b>
	<b>AL/FL Survey</b>	<b>MS Survey</b>	
In what school district do you teach?	✓	✓	
What is your highest academic degree?	✓	✓	
How many years have you been teaching?	✓	✓	
What grade(s) do you teach?	✓	✓	
Do you take your students on field trips as a part of your science curriculum/activities?	✓	✓	
What are the barriers for taking a class on a field trip?	✓	✓	
How interested would you be in participating in professional development in the following Life Sciences topics?	✓	✓	
How interested would you be in participating in professional	✓	✓	

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development in the following Earth Sciences topics?			
How interested would you be in participating in professional development in the following Physical Sciences topics?	✓	✓	
How interested would you be in participating in professional development in the following basic science skills topics?	✓	✓	
What are your preferred professional development delivery formats?	✓	✓	
What are your preferred delivery methods for professional development?	✓	✓	
In what format do you prefer to receive professional development materials?	✓	✓	
In terms of evaluating professional development programs, what type of evaluation method do you prefer?	✓	✓	
What is your preferred time for attending professional development programs?	✓	✓	
What factors affect your decision to attend professional development programs?	✓	✓	
How far would you be willing to travel to attend a daylong professional development program?	✓	✓	
How much would you be willing to pay for a professional development workshop?	✓	✓	
Are CEUs (continuing education units) and/or PLUs (professional learning units) important and/or in determining which professional development opportunities you participate?	✓	✓	
How do you usually learn about professional development opportunities?	✓	✓	
How many years have you been teaching about estuaries, watersheds and coastal topics?		✓	✓
Which trainings have you taken to supplement your estuarine/coastal/watershed education?		✓	✓
How many hours of continuing education have you obtained in the discipline of estuarine science within the last 3 years?		✓	✓
Think about your plans for your class for the entire year. How much emphasis did you or will you give each of the following?		✓	✓
How many class or activity periods of estuary, watershed, and/or coastal instruction do your students receive in a typical school year?		✓	✓
Were you aware that your state has a National Estuarine Research Reserve?		✓	✓
If “yes”, have you ever used any of their educational services (example: a field trip) or products (example: curricula or publications)?		✓	✓
If yes, have you ever taken your class on a field trip to a National Estuarine Research Reserve in your or a nearby state?	✓		

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From which web resources do you currently obtain estuary, watersheds, and coastal information for use in your classroom?		✓	✓
Which of these real-time/near-real-time data streams have you used in your teaching?		✓	Required data point

### *2.1. Survey Validation*

Content validity under scrutiny by expert analysts was the practical method of choice for this assessment. The original version of survey was submitted to Dr. Brenda Litchfield and Dr. James Van Hannagan of the University of South Alabama College of Education, Ms. Elizabeth Little and Mrs. Christine Nassar, science supervisors for the Mobile County Public School System, and Mrs. Peggy Duck and Dr. Phyllis French, science supervisors for the Baldwin County Board of Education. The items were analyzed for sound construction, and the science topic items were examined for alignment with the Alabama Course of Study. (Note: the Florida Course of Study was also incorporated into the science topic items and aligned well with the Alabama Course of Study). Only minor suggestions for improvement were offered by the reviewers and were incorporated into the survey items. The Mississippi version was submitted to Dr. James Van Hannagan of the University of South Alabama College of Education for a test of inner-rater reliability, and was field tested by middle and high school science teachers in Jackson County, Mississippi.

### *2.2. Survey Distribution*

The survey distribution was handled differently than the Alabama and Florida surveys. The external evaluator worked with the Education Director at the Grand Bay NERR to personally visit each school district in Jackson County, Mississippi. A representative in each district was approached with a request to participate. Participation confirmation was verified via email, and the survey went live on March 22, and remained live through May 15. Two follow-up reminder emails were sent to district representative during the eight weeks the survey was live. Six out of the seven districts approached responded to the survey.

## **3. Survey Findings – Mississippi Middle and High School Science Teachers**

A total of 54 middle and high school science teachers responded to the survey. Responses to each survey items are listed below.

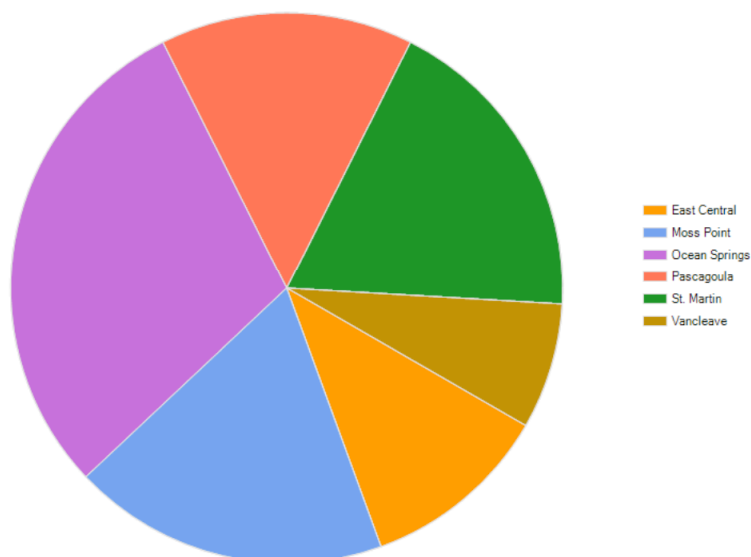
### ***Item 1: In what school system/district do you teach?***

The following responses were recorded:

- Ocean Springs n=16/29.6%
- Moss Point n=10/18.5%
- St. Martin n=10/18.5%
- Pascagoula n=8/14.8%
- East Central n=6/11.1%
- Vancleave n=4/7.4%

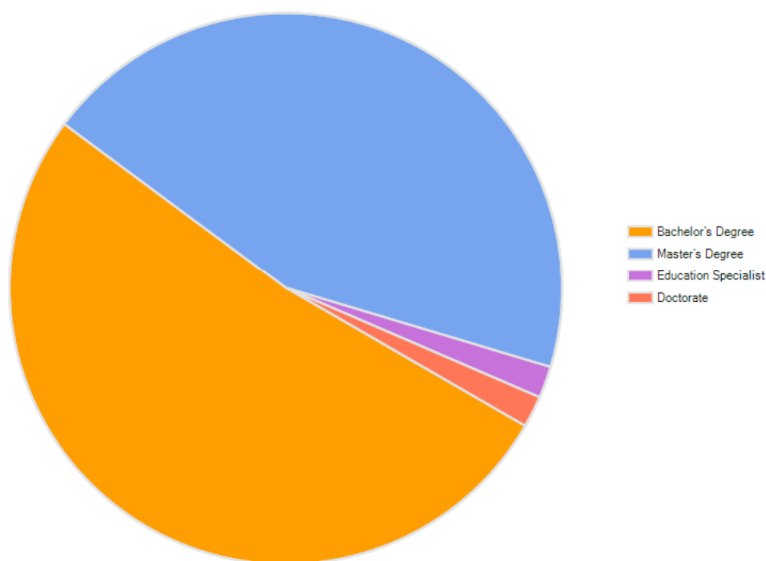
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In what school district do you teach?



***Item 2: What is your highest academic degree?***

What is your highest academic degree?



Other responses:

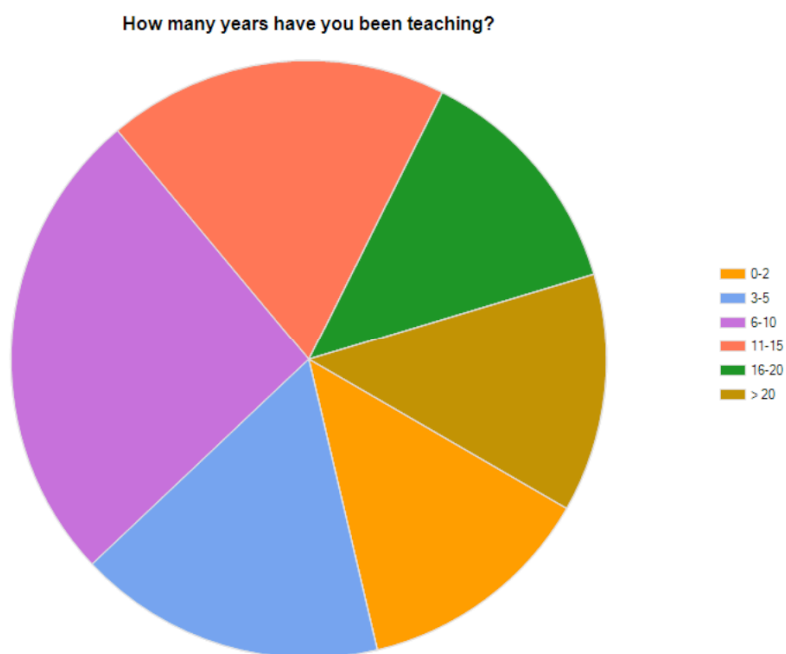
Almost finished my Ph.D.

Working on my Master's

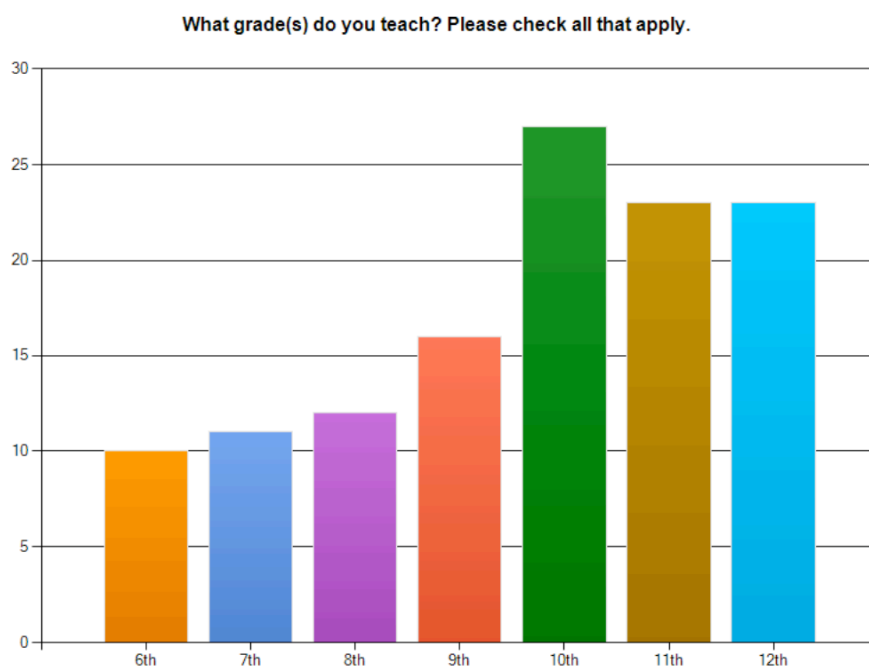
About to finish Masters-Bio and begin PhD in Coastal Science

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***Item 3: How many years have you been teaching?***



***Item 4: What grade(s) do you teach?***

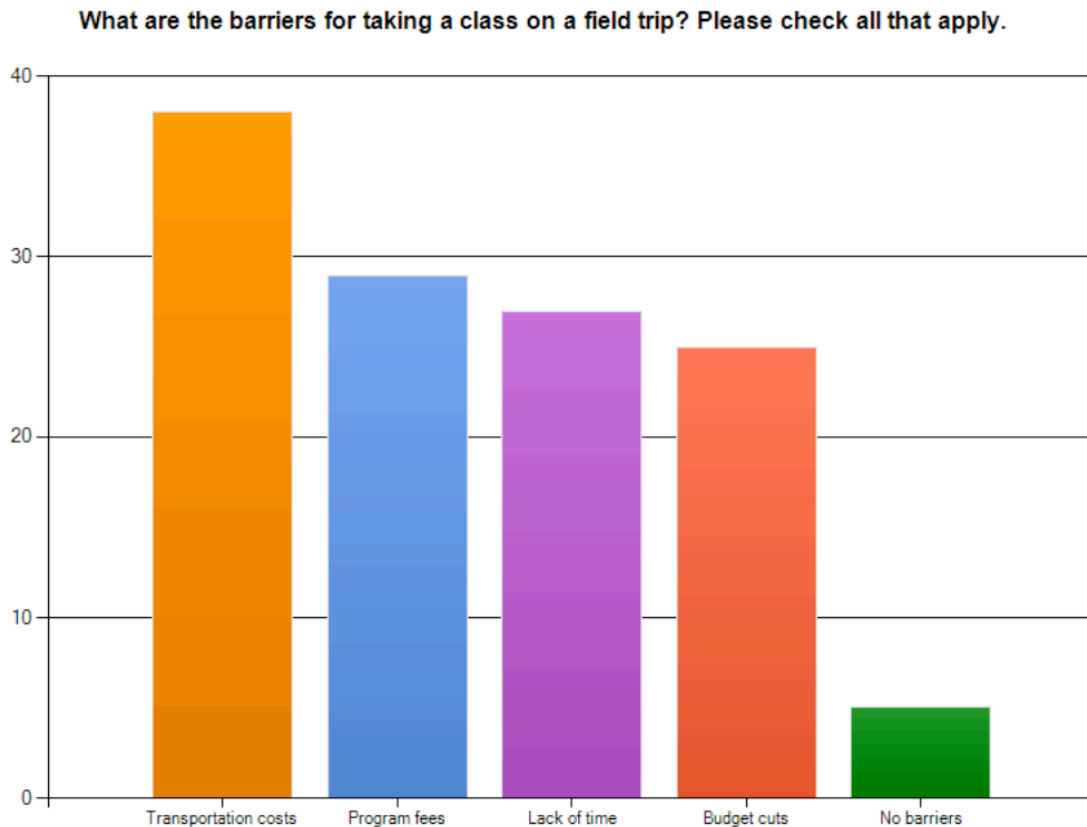


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***Item 5: Do you take your students on field trips as a part of your science curriculum/activities?***

- Yes                      51.9%                      n=28
- No                        48.1%                      n=26

***Item 6: What are the barriers for taking a class on a field trip?***

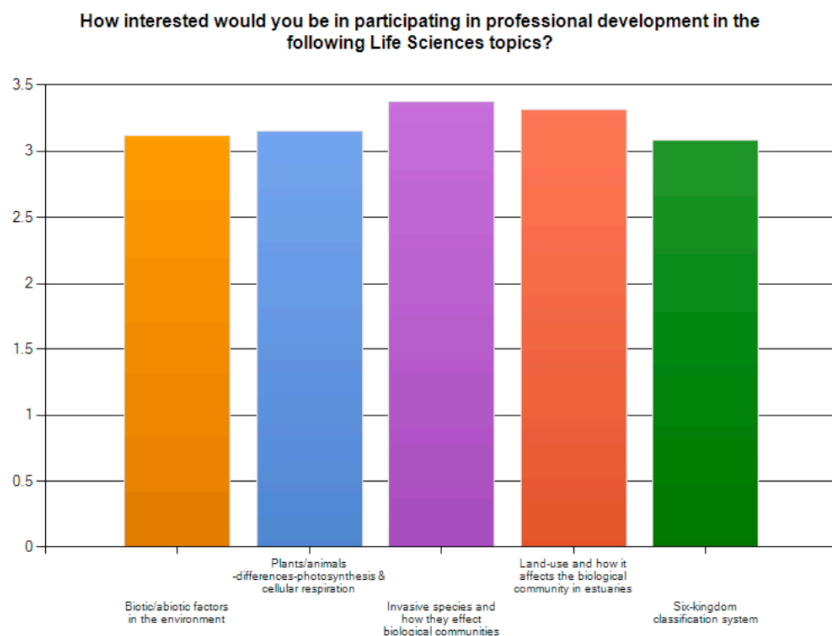


Other responses:

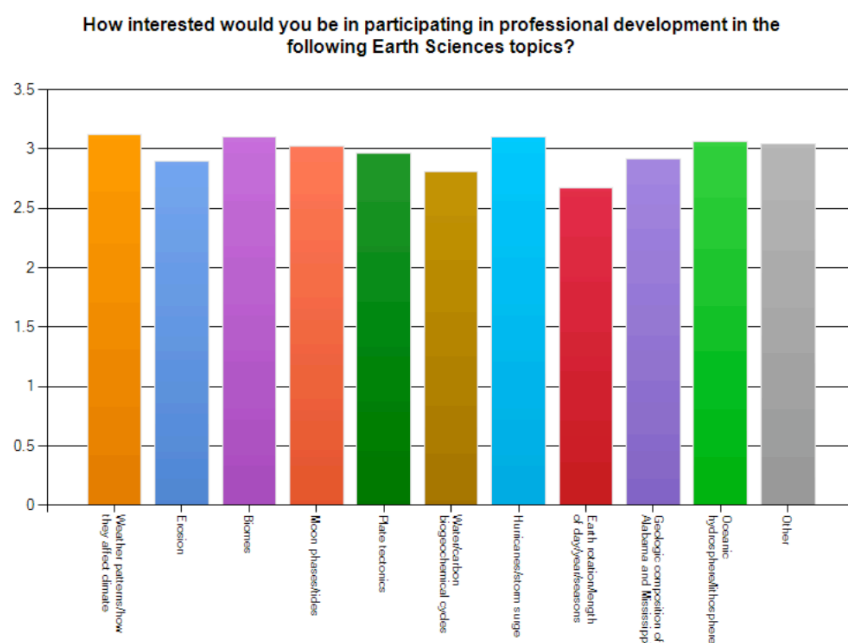
The paperwork required n=4  
 Program being able to serve 120 - 250 students at one time  
 Time limits  
 Need beneficial field trip ideas for my curriculum  
 School only allows 1 trip per year  
 First year, no trips were organized-don't know why  
 Discipline Problems  
 Alternative is not allowed on field trips.  
 Complexity of process

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***Item 7. How interested would you be in participating in professional development in the following Life Sciences topics?***

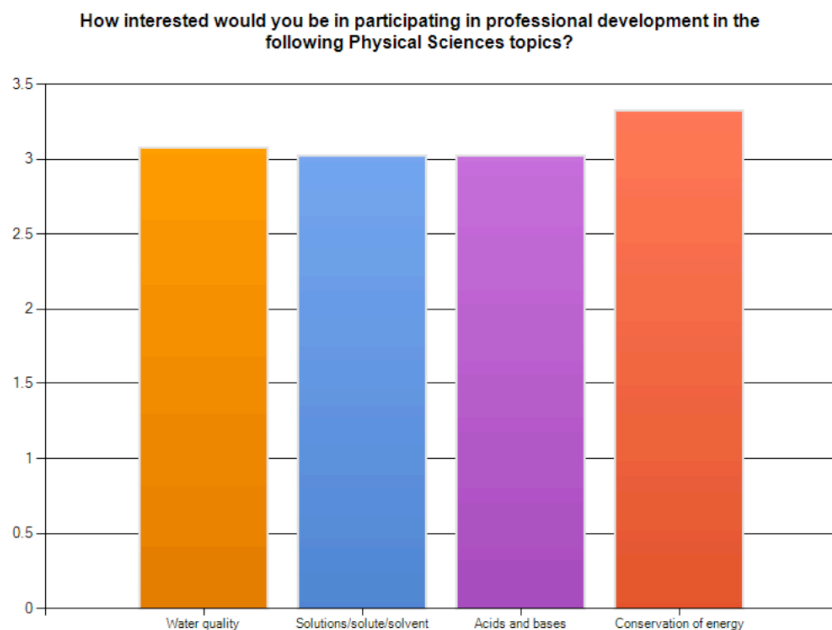


***Item 8. How interested would you be in participating in professional development in the following Earth Sciences topics?***

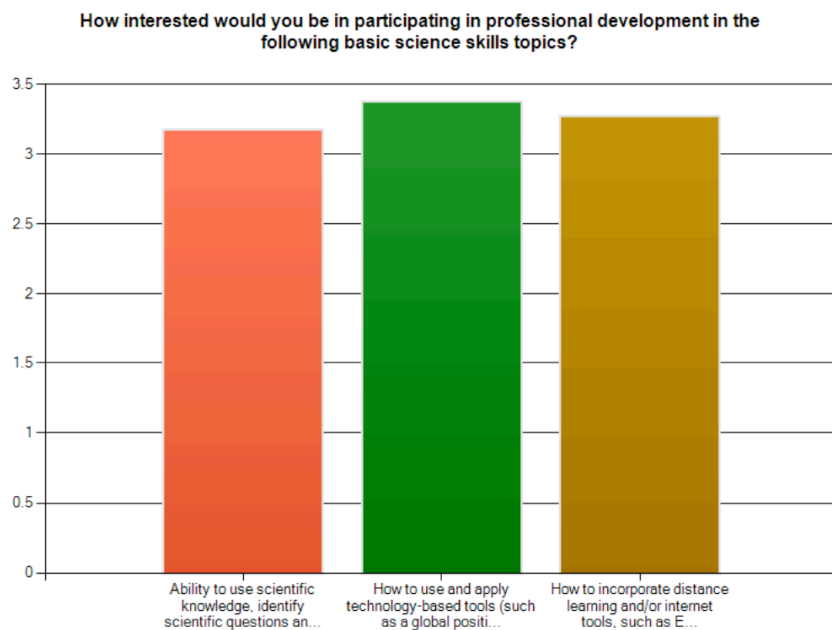


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***Item 9. How interested would you be in participating in professional development in the following Physical Sciences topics?***



***Item 10. How interested would you be in participating in professional development in the following basic science skills topics?***

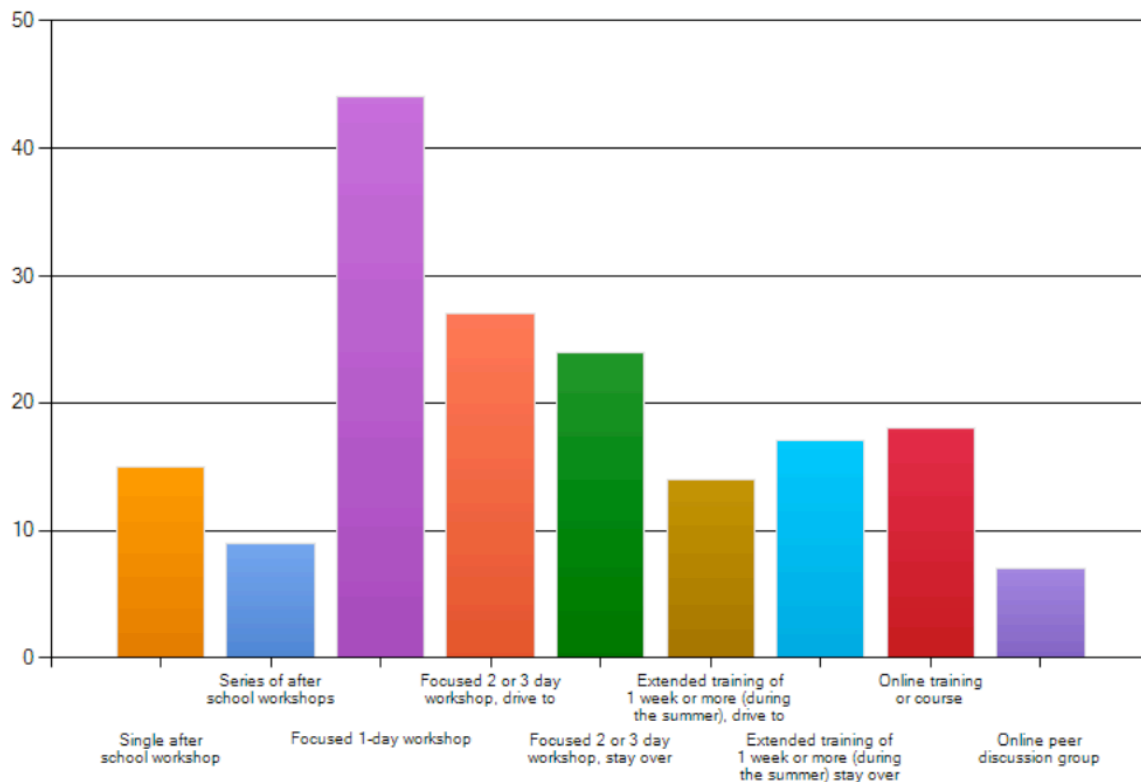




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***Item 11: What are your preferred professional development delivery formats?***

**What are your preferred professional development delivery formats? Please check all that apply.**



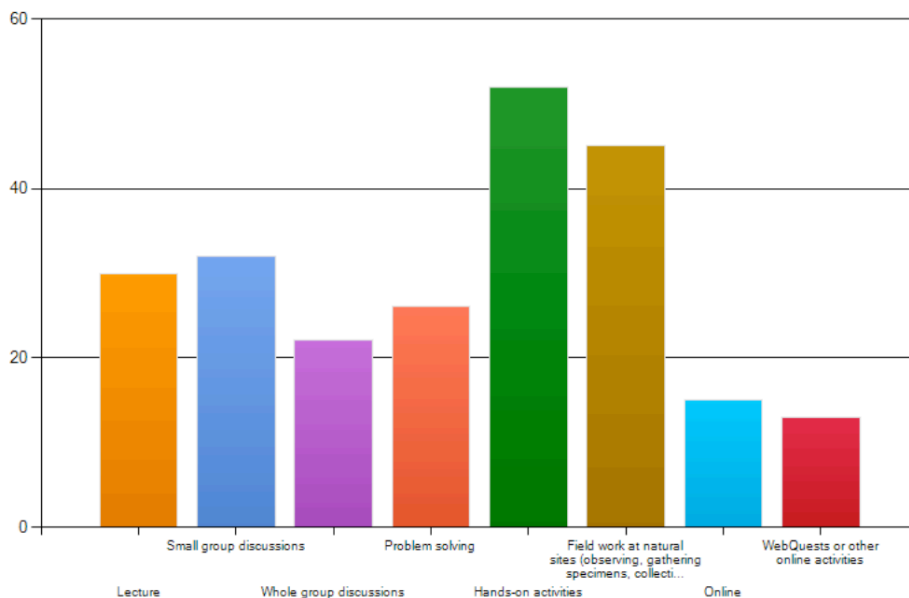
Other responses:

Combination of all 3 that I selected because it covers all bases  
Professional development days

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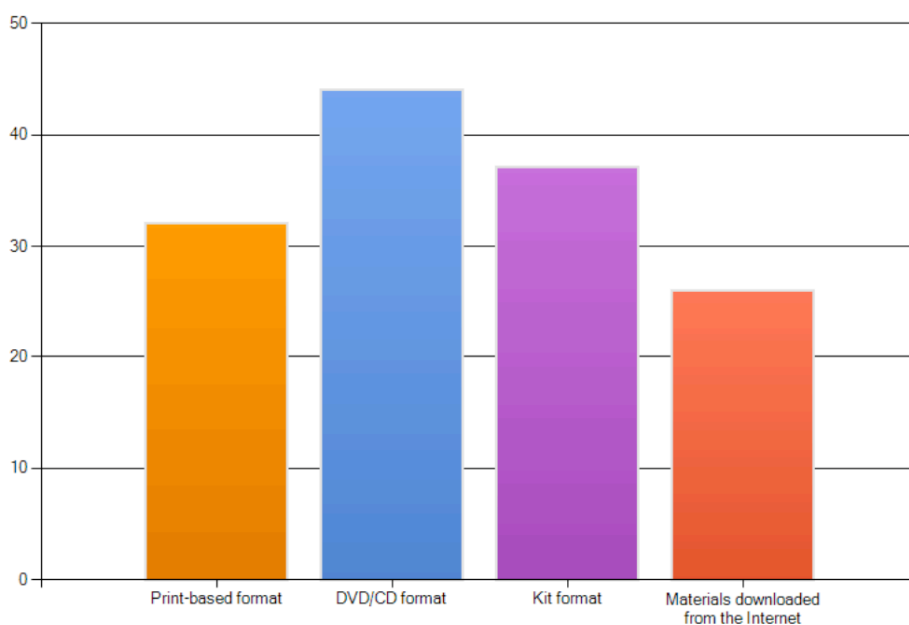
***Item 12: What are your preferred delivery methods for professional development?***

What are your preferred delivery methods for professional development? Please check all that apply.



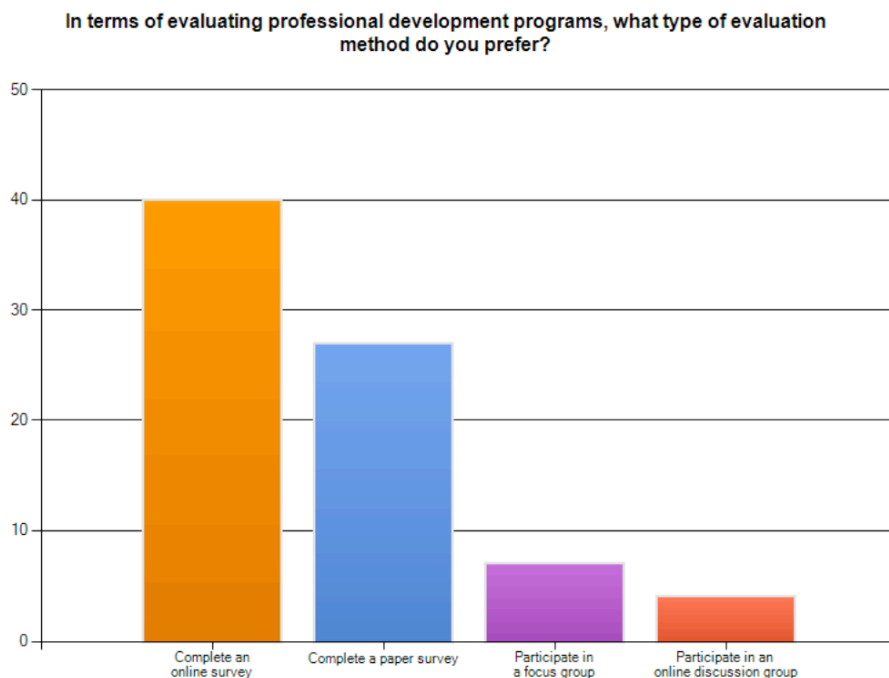
***Item 13: In what format do you prefer to receive professional development materials?***

In what format do you prefer to receive professional development materials? Check all that apply.

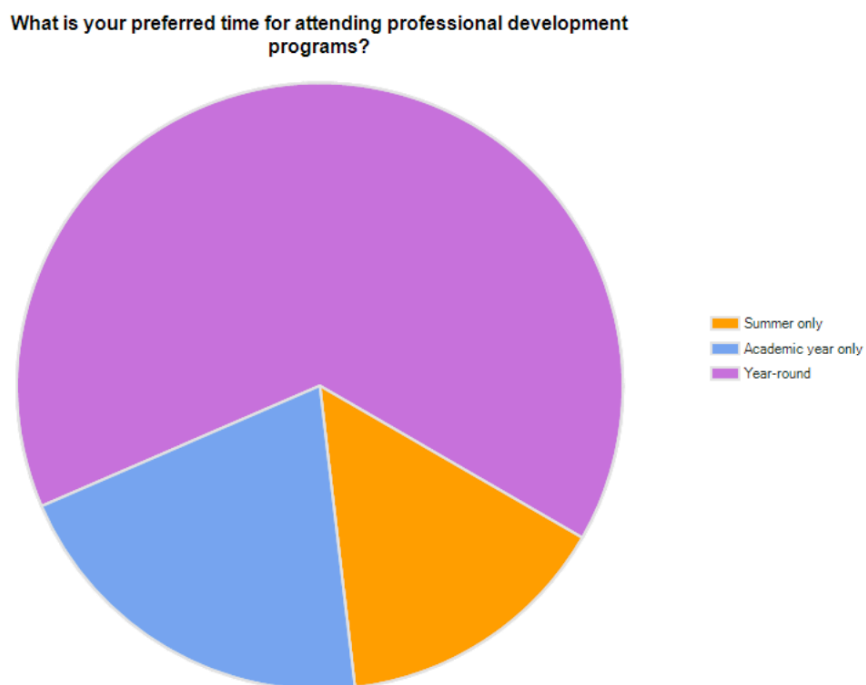


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***Item 14: In terms of evaluating professional development programs, what types of evaluation methods do you prefer?***

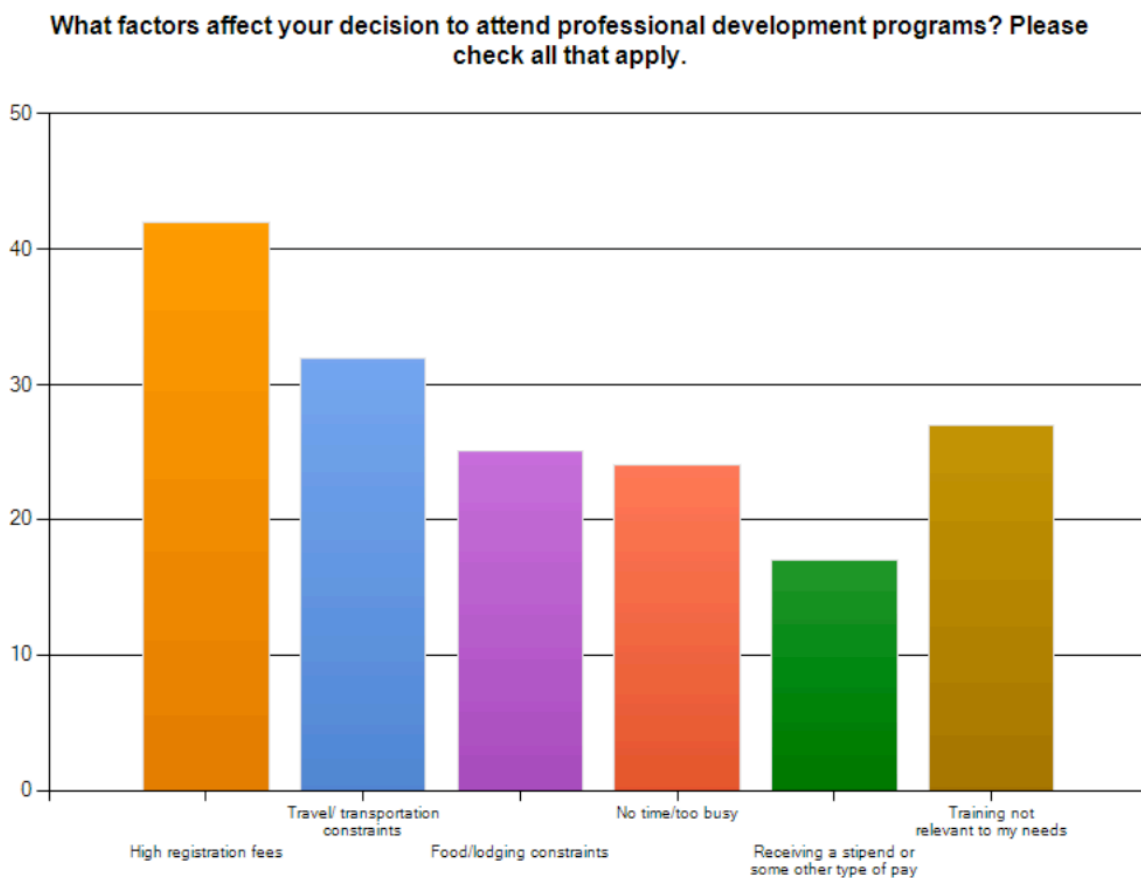


***Item 15: What is your preferred time for attending professional development program?***



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***Item 16: What factors affect your decision to attend professional development programs?***



Other responses:

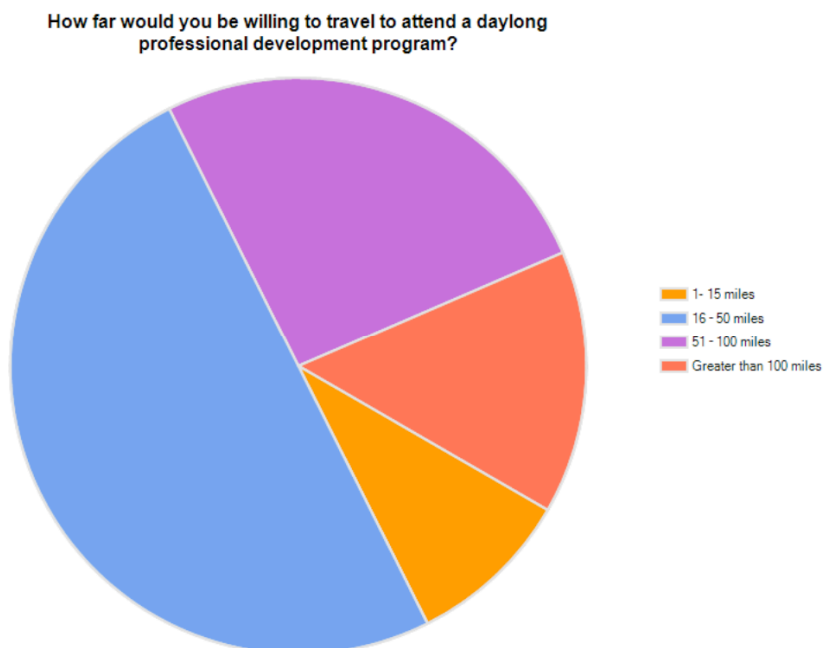
School district will not give professional days.

District approval

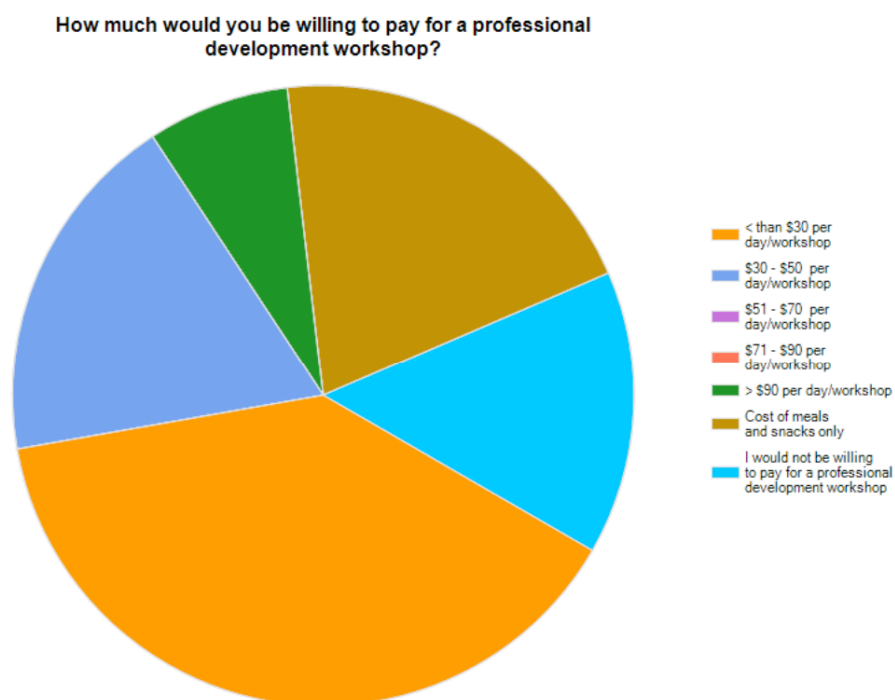
No money to pay for the programs

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***Item 17: How far would you be willing to travel to attend a daylong professional development program?***

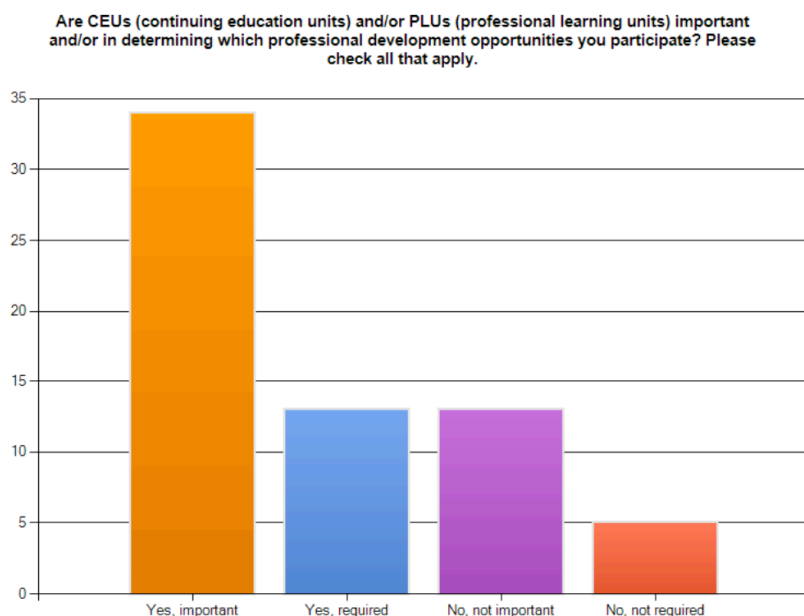


***Item 18: How much would you be willing to pay for a professional development workshop?***

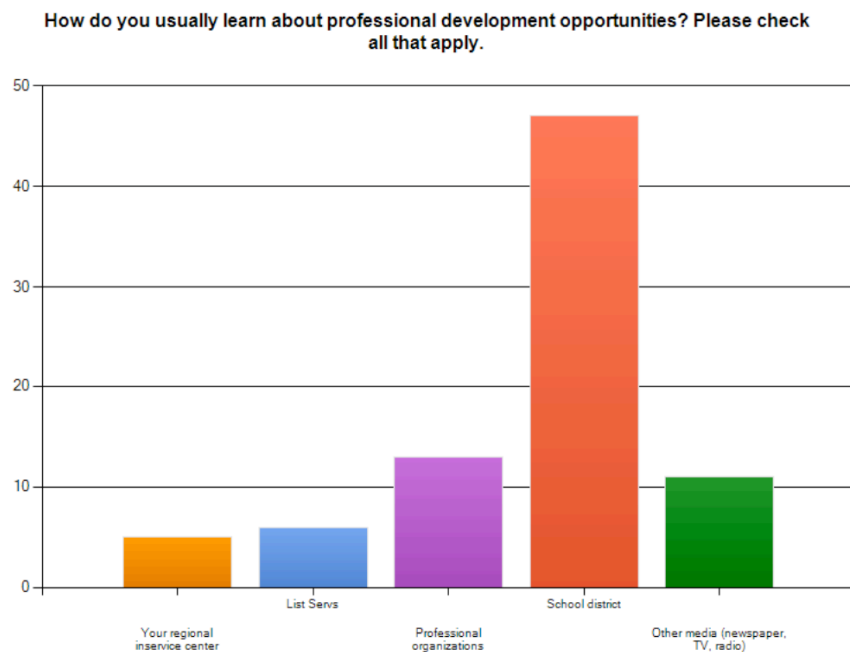


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***Item 19: Are CEUs (continuing education units) and/or PLUs (professional learning units) important or required in determining in which professional development opportunities you participate?***



***Item 20: How do you usually learn about professional development opportunities?***





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***Item 22. Which trainings have you taken to supplement your estuarine/coastal/watershed education?***



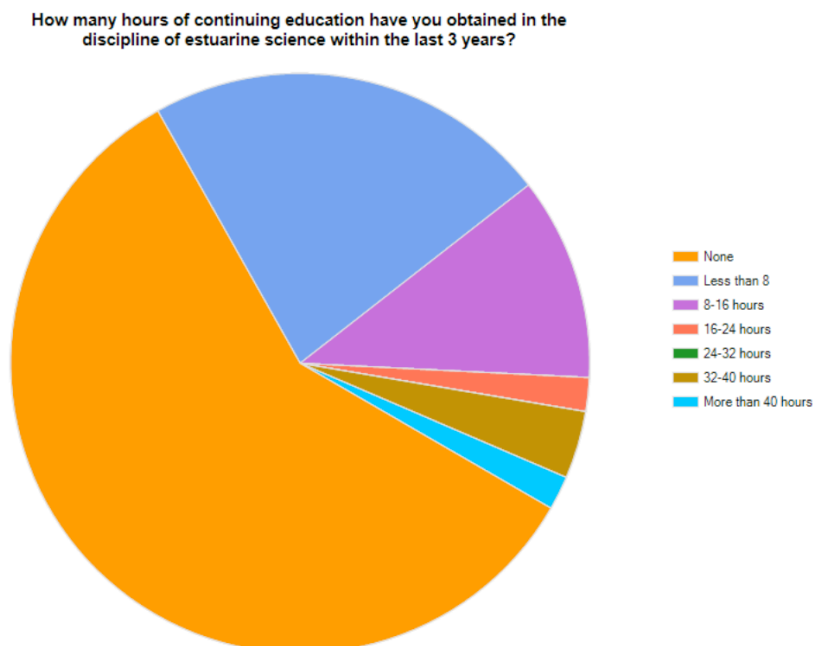
Other responses:

None	n=20
Wetlands Diversity Workshop through Chevron	n=5
GLOBE - Chevron Audubon Society Workshop	n=2
Adopt-A-Stream	
I had a summer course @ OS research lab	
Stennis Space Center	
Master Naturalists	
COSEE	

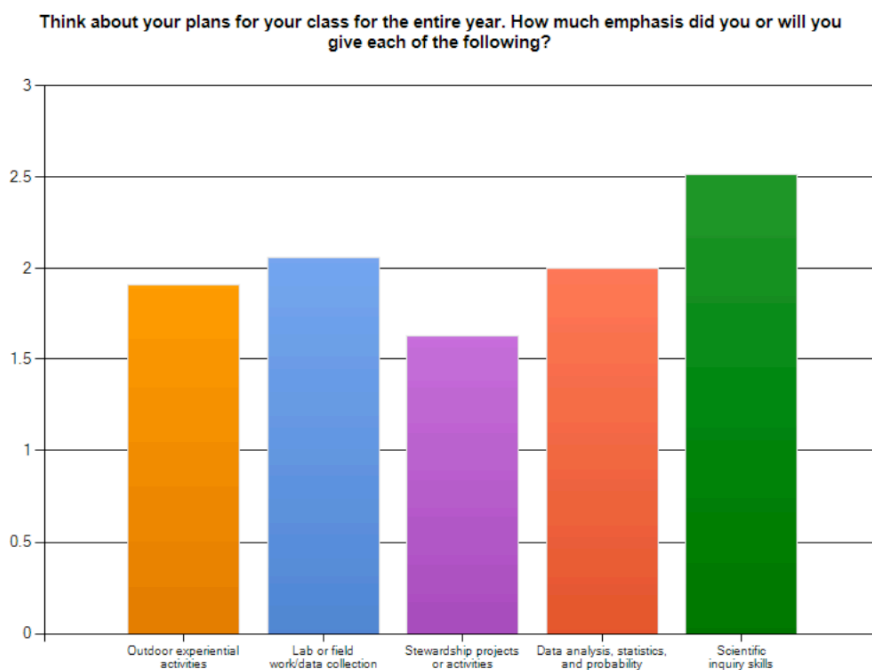


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***Item 23. How many hours of continuing education have you obtained in the discipline of estuarine science within the last 3 years?***



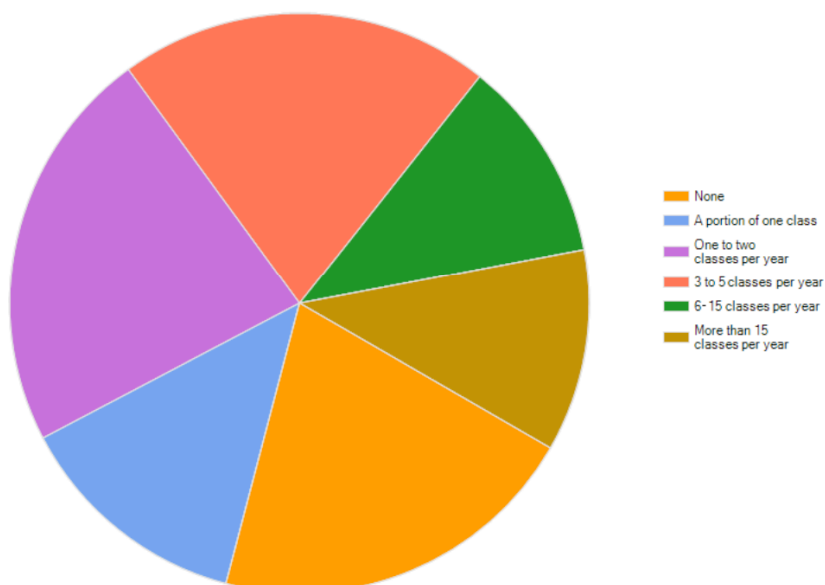
***Item 24. Think about your plans for your class for the entire year. How much emphasis did you or will you give each of the following?***



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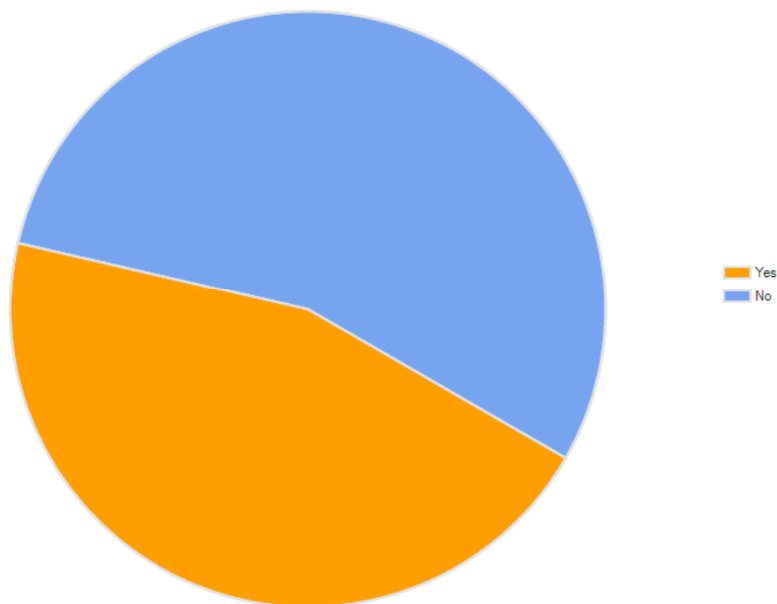
***Item 25. How many class or activity periods of estuary, watershed, and/or coastal instruction do your students receive in a typical school year?***

How many class or activity periods of estuary, watershed, and/or coastal instruction do your students receive in a typical school year?



***Item 26. Were you aware that your state has a National Estuarine Research Reserve?***

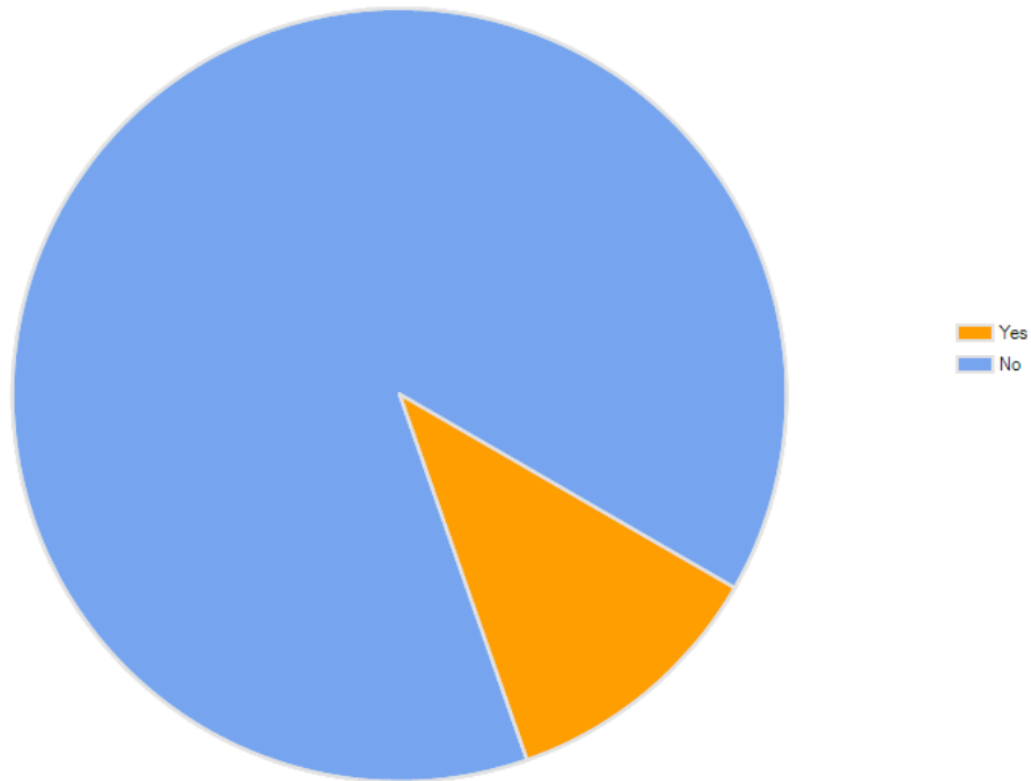
Were you aware that your state has a National Estuarine Research Reserve?



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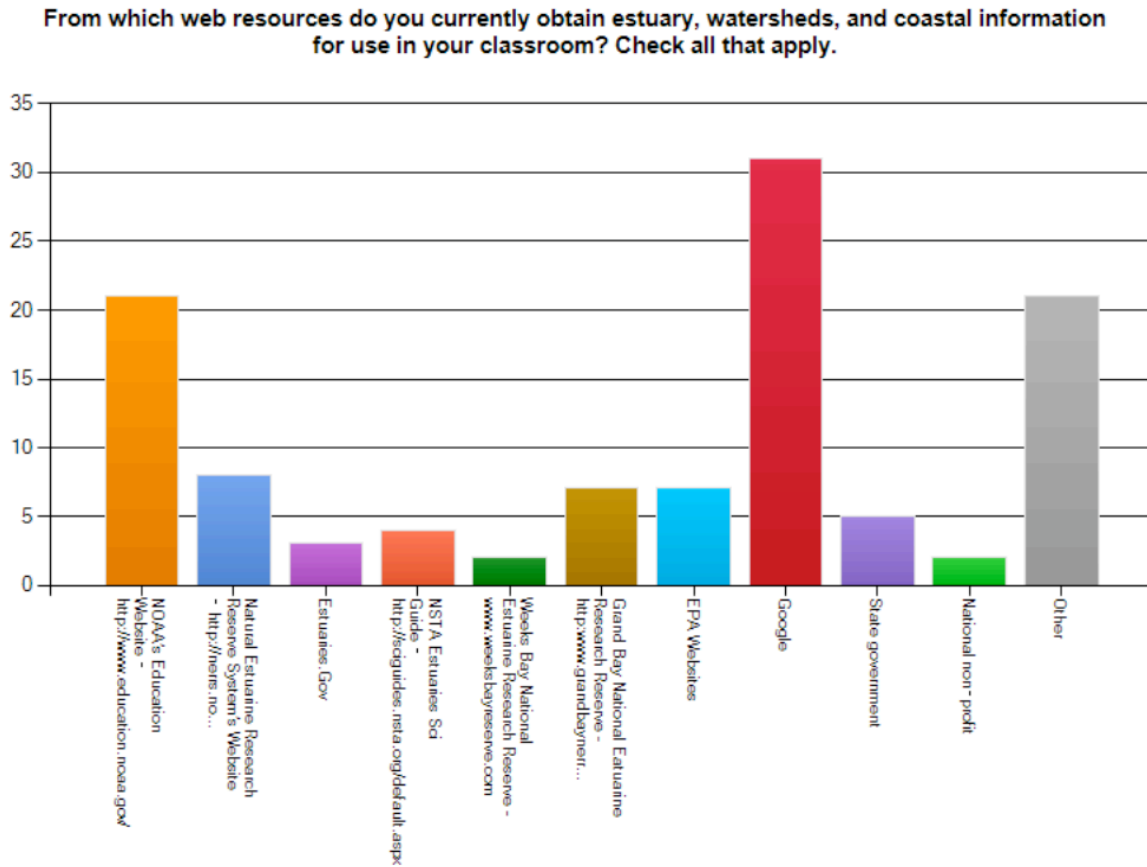
***Item 27. If “yes”, have you ever used any of their educational services (example: a field trip) or products (example: curricula or publications)?***

**If “yes”, have you ever used any of their educational services (example: a field trip) or products (example: curricula or publications)?**



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***Item 28. From which web resources do you currently obtain estuary, watersheds, and coastal information for use in your classroom?***

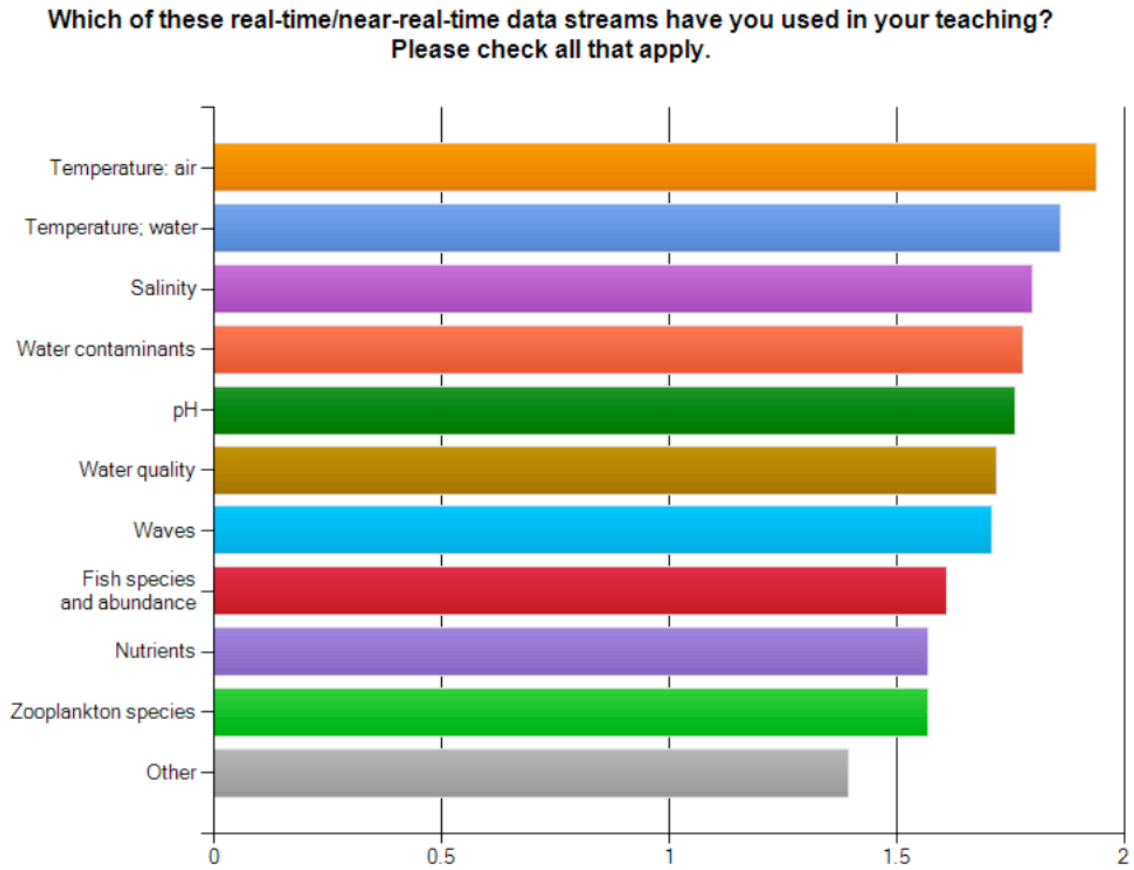


Other responses:

From Mark LaSalle  
Dauphin Island Sea Lab, Gulf coast research lab  
Mississippi Sandhill Crane Refuge website, Sea turtle site – Texas

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***Item 29. Which of these real-time/near-real-time data streams have you used in your teaching?***



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#### **4. Survey Data Analysis**

This section will be presented in six parts: 1) a snapshot of the typical Mississippi middle/high school teacher; 2) a comparison of the field trip demographic data for the Alabama/Florida and Mississippi cadres; the analysis of the preferred professional development topics from 3) the Mississippi middle and high school science teacher survey; 5) a comparison of the professional development needs of the Alabama/Florida and Mississippi cadres; and 6) the impact of a less than statistically significant sample size.

##### ***4.1. Snapshots of Typical Respondents***

The typical Mississippi respondent exhibited the following characteristics:

- Teaches in Ocean Springs, Moss Point, or St. Martin school systems;
- Has a bachelors or Master's degree;
- Has been teaching more than 5 years; and
- Teaches high school (50% teach 10<sup>th</sup> grade) as opposed to middle school.

##### ***4.2. Field Trip Demographics, Both Cadres***

Table 1 below displays a comparison of the field trip demographic data provided by each group.

**Table 1. Comparison of Field Trip Data by Cadre**

<b>Survey Item</b>	<b>AL/FL cadre</b>	<b>MS cadre</b>	<b>ALL</b>
Do you take your students on field trips as a part of your science curriculum/activities?	Yes=62.3%	Yes=51.9%	Yes=60%
	No=37.7%	No=48.1%	No=40%
Were you aware that your state has a National Estaurine Research Reserve?	Yes= 60.1%	Yes= 45.3%	Yes=60%
	No=39.9%	No=54.7%	No=40%
What are the barriers to taking a class on a field trip? (Listed in order of highest to lowest)	Transportation costs	Transportation costs	Transportation costs
	Lack of time	Program fees	Lack of time
	Budget cuts	Lack of time	Budget cuts
	Program fees	Budget cuts	Program fees
	No barriers	No barriers	No barriers

*Evaluation Observation:* The Mississippi responses differ somewhat from the Alabama/Florida cadre. A smaller number of Mississippi teachers take their students on field trips, and were less aware of NERRs in their state. Barriers to field trips differed slightly. However, when the Mississippi cadre responses were combined with the Alabama/Florida cadre and analyzed, their responses were remarkably similar to the Alabama/Florida cadre alone.

The respondents provided other barriers, which are displayed below in Table 2.

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**Table 2. Other Barriers to Field Trips by All Groups**

<b>Other Barriers</b>	<b>AL/FL ES</b>	<b>AL/FL MS/HS</b>	<b>MS MS/HS</b>
Limited # of trips per year	×		×
Age appropriate programs	×		
Overbooked, hard to schedule us in	×		
Programs remain the same throughout the years	×	×	
My kids are ESE	×		
Mosquitoes	×		
Number allowed/Grade level in agreement on those chosen.	×	×	×
Weeks Bay has not publicized	×		
Bureaucracy, system requirements	×	×	×
Curriculum/objectives appropriate programs	×	×	×
Water restrictions	×		
Staffing	×	×	×
Behavior concerns with students		×	×
Finding chaperones		×	
Liability		×	

*Evaluation Observation:* Four barriers emerged as being shared across all cadres: 1) Number allowed/Grade level in agreement on those chosen; 2) Bureaucracy, system requirements; 3) Curriculum/objectives appropriate programs; and 4) Staffing.

The majority of the barriers itemized above are issues outside the jurisdiction or power of the Reserve to ameliorate. However, the following could be explored by Reserve staff as being issues that could be considered for improvement:

1. The Reserve curriculum. The purpose of the planned evaluation is to explore the efficacy and effectiveness of the curriculum in the light of data from this needs assessment.
2. Difficulty in scheduling a field trip.
3. Size of field trip groups.
4. Weeks Bay publicity (both NERRs in general and the Reserve in particular) to schools and school systems.

**4.3. Preferred Professional Development Topics, Middle and High School Teachers – different topics**

The tables below display teacher level of interest by cohort in topics in Life Sciences, Earth Sciences, Physical Sciences, and other basic science topics and skills.

**Table 3. Middle/High School Level of Interest, Life Sciences Topics**

<b>Life Sciences Topic</b>	<b>Not or Slightly Interested</b>		<b>Interested or Very Interested</b>	
	<b>AL/FL</b>	<b>MS</b>	<b>AL/FL</b>	<b>MS</b>

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Biotic/abiotic factors in the environment	54.5%	25.5%	45.5%	74.5%
Plants/animals – differences-photosynthesis & cellular respiration	56.1%	24.1%	43.9%	75.9%
Invasive species and how they effect biological communities	40.3%	17.3	59.7%	82.7%
Land-use and how it affects the biological community in estuaries	40.6%	18.6%	59.4%	81.5%
Six-kingdom classification system	32.7%	24.5%	67.3%	75.5%

**Table 4. Middle/High School Level of Interest, Earth Sciences Topics**

Earth Sciences Topic	Not or Slightly Interested		Interested or Very Interested	
	AL/FL	MS	AL/FL	MS
Weather patterns/how they affect climate	50%	29.4%	50%	70.6%
Erosion	62.3%	36%	37.7%	64%
Biomes	48.2%	25%	51.8%	75%
Moon phases/tides	52.7%	28.3%	47.3%	71.7%
Plate tectonics	58.5%	31.3%	41.2%	68.7%
Water/carbon biogeochemical cycles	58.5%	40.4%	46.5%	59.6%
Hurricanes/storm surge	46.1%	26%	53.9%	74%
Earth rotation/length of day/year/seasons	61.2%	46.1%	38.8%	53.9%
Solar system/astronomy	50.8%	N/A*	49.2%	N/A
Space Exploration	51.2%	N/A	48.8%	N/A
Geologic composition of Alabama and Mississippi	57.1%	34.6%	42.9%	65.4%
Oceanic hydrosphere/lithosphere	53.4%	29.4%	46.6%	70.6%
Watersheds	48.5%	29.7%	51.5%	70.4%

\*The Education Coordinator for the Grand Bay NERR in Mississippi stated that solar system and space exploration topics were not of significance for this survey.

**Table 5. Middle/High School Level of Interest, Physical Sciences Topics**

Physical Sciences Topic	Not or Slightly Interested		Interested or Very Interested	
	AL/FL	MS	AL/FL	MS
Water Quality	47.4%	27.8%	52.6%	72.2%
Solutions/solute/solvent	54.3%	24.5%	45.7%	75.4%
Acids and Bases	56.3%	26.4%	43.7%	73.6%
Conservation of energy	40.2%	15.1%	59.8%	84.9%

**Table 6. Middle/High School Level of Interest, Basic Science Skills Topics**

Basic Science Skills Topic	Not or Slightly Interested		Interested or Very Interested	
	AL/FL	MS	AL/FL	MS
Ability to use scientific knowledge, identify	45.5%	20.7%	54.5%	79.3%



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scientific questions and draw evidence-based conclusions.				
How to use and apply technology-based tools (such as a global positioning system (GPS).	32.1%	15.4%	67.9%	84.6%
How to incorporate distance learning and/or internet tools, such as EstuaryLive and Google Earth, applications into science lessons.	33.6%	17.3%	66.4%	82.7%

*Evaluation Observation:* The Mississippi cohort was significantly more interested in all topics in every category than were its Alabama/Florida cohort.

#### ***4.4. Teacher Professional Development Needs***

This section presents survey findings related to teacher professional development preferences. Since both populations were offered the same survey items for consideration, they will be presented below with a side-by-side comparison of group responses. The top three responses by percentage will be displayed in Table 12.

**Table 7. Professional Development Responses by Group**

<b>Item</b>	<b>AL/FL Cohort</b>		<b>MS Cohort</b>		<b>Implications</b>
What are your preferred professional development delivery formats?	Focused 1-day workshop	75.4%	Focused 1-day workshop	81.5%	Focused 1-day workshop favored by all groups.
	Focused 2 or 3 day workshop, drive to	40.6%	Focused 2 or 3 day workshop, drive to	50%	
	Online training or course	39.9%	Online training or course	33.3%	
What are your preferred delivery methods for professional development?	Hands-on activities	80.4%	Hands-on activities	96.3%	Similar in preference.
	Field work at natural sites	76.1%	Field work at natural sites	83.3%	
	Lecture	47.8%	Lecture	55.6%	
In what format do you prefer to receive professional development materials?	DVD/CD format	68.1%	DVD/CD format	81.5%	Similar in preference.
	Kit format	60.1%	Kit format	68.5%	
	Print-based format	48.6%	Print-based format		
In terms of evaluating professional development programs, what type of evaluation	Complete an online survey	73.2%	Complete an online survey	74.1%	Groups display same evaluation preferences.
	Complete a paper survey	30.7%	Complete a paper survey	50%	
	Focus group	5.1%	Focus group	13%	
	Online	tied			

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method do you prefer?	discussion group				
What is your preferred time for attending professional development program?	Year-round	50%	Year-round	64.8%	<u>Unexpected:</u> all groups' first choice.
	Summer only	26.8%	Academic year only	20.4%	
	Academic year only	23.2%	Summer only	14.8%	
What factors affect your decision to attend professional development programs?	Travel/ transportation constraints	68.8%	High registration fees	77.8%	MS responses very different from AL/Fl cohort responses. <u>Unexpected:</u> lack of relevance of training.
	High registration fees	62.3%	Travel/ transportation constraints	59.3%	
	No time/too busy	55.8%	Training not relevant to my needs	50%	
How far would you be willing to travel to attend a daylong professional development program?	16 – 50 miles	48.6%	16 – 50 miles	50%	Top 2 responses uniform across cohort. <u>Unexpected:</u> MS willing to travel farther.
	51 – 100 miles	31.2%	51 – 100 miles	25.9%	
	1- 15 miles	12.3%	>100 miles	14.8%	
How much would you be willing to pay for a professional development workshop?	< than \$30 per day/workshop	30.4%	< than \$30 per day/workshop	38.9%	Shared first choice. MS cohort willing to invest more money in PD offerings.
	I would not be willing to pay	26.1%	Cost of meals and snacks only	20.4%	
	Cost of meals and snacks only	20.3%	\$30-\$50 per day	18.5%	
Are CEUs (continuing education units) and/or PLUs (professional learning units) important and/or in determining which professional development opportunities you participate?	Yes, important	52.9%	Yes, important	63%	Shared first choice. <u>Unexpected:</u> MS cohort tie on other responses.
	Yes, required	31.9%	No, not important	24.1% tied	
	No, not important	26.1%	Yes, required		
How do you	School district	78.3%	School district	87.%	Shared first choice.

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usually learn about professional development opportunities?	SARIC	40.6%	Professional organizations	24.1%	
	Professional organizations	32.6%	List Servs/Internet	17%	

#### ***4.5 NERR/KEEP Needs Assessment Required Questions Findings***

The required questions were developed at the national level of the NERR system as a strategy to 1) collect baseline data related to NERR educational programs; 2) identify future trends shaping estuary education; and 3) evaluate the effectiveness of system-wide efforts to help and shape future NERR educational directions. The NERR MA/NA Subcommittee developed the required questions to serve as a template that could be used by all NERR educators, starting in fiscal year 2010. In anticipation of the adoption of this template, the required questions were added to the Mississippi cohort survey to be field tested in order to confirm item reliability and validity.

The 2009 Weeks Bay Needs Assessment survey included variations of the required questions. Although the required questions were not mandated at the time Weeks Bay conducted its needs assessment, assessment designers were aware that the questions would be required in the future. Because of this awareness, the designers incorporated as many of the questions into the assessment design as were relevant to the goal to depict an accurate picture of area science teacher professional development needs and preferences. Table 8 displays the required question and related Weeks Bay question.

**Table 8. Comparison of Weeks Bay Survey Questions and Required Questions**

<b>NERR Required Question</b>	<b>Related Weeks Bay Question</b>
How many years have you been teaching about estuaries, watersheds and coastal topics?	How many years have you been teaching (science)?
Which trainings have you taken to supplement your estuarine/coastal/watershed education?	What is your highest academic degree?
How many hours of continuing education have you obtained in the discipline of estuarine science within the last 3 years?	Are CEUs or PLUs important and/or required in determining which professional development opportunities you participate?
Think about your plans for your class for the entire year. How much emphasis did you or will you give each of the following topics?	How interested would you be in participating in professional development in the following Life/Earth/Physical/general science topics?
How many class or activity periods of estuary, watershed, and/or coastal instruction do your students receive in a typical school year?	No related question
Were you aware that your state has a National Estuarine Research Reserve?	Were you aware that your state has a National Estuarine Research Reserve?
From which web resources do you currently obtain estuary, watersheds, and coastal information for use in your classroom?	How do you usually learn about professional development opportunities?

Findings for the seven required questions depicted in Table 9 below.

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**Table 9. Summary of Findings, NERR Required Findings, Mississippi Respondents, N=54**

<b>Required Question</b>	<b>Summary of Findings</b>
How many years have you been teaching about estuaries, watersheds and coastal topics?	<ul style="list-style-type: none"> <li>• None: /32.2%</li> <li>• Less than 2 years: 17%</li> <li>• 5-7 years: 17%</li> </ul>
Which trainings have you taken to supplement your estuarine/coastal/watershed education?	<ul style="list-style-type: none"> <li>• Project WET: 37.7%</li> <li>• The Jason Project Professional Development: 28.3%</li> <li>• Teachers on the Estuary Training: 26.4%</li> <li>• Project Wild Aquatic: 28.3%</li> </ul>
How many hours of continuing education have you obtained in the discipline of estuarine science within the last 3 years?	<ul style="list-style-type: none"> <li>• None: 58.5%</li> <li>• Less than 8: 22.6%</li> <li>• 8-16 hours: 11.3%</li> </ul>
Think about your plans for your class for the entire year. How much emphasis did you or will you give each of the following topics?	Outdoor experiential activities: Little or no: 26.4% Moderate: 56.6% Heavy: 17%
	Lab or field work/data collection: Little or no: 24.5% Moderate: 45.3% Heavy: 30.2%
	Stewardship projects or activities: Little or no: 46.2% Moderate: 44.2% Heavy: 9.6%
	Data analysis, statistics, and probability: Little or no: 20.8% Moderate: 58.5% Heavy: 20.8%
	Scientific inquiry skills: Little or no: 3.8% Moderate: 41.5% Heavy: 54.7%
How many class or activity periods of estuary, watershed, and/or coastal instruction do your students receive in a typical school year?	<ul style="list-style-type: none"> <li>• None: 20.8%</li> <li>• A portion of 1 class: 13.2%</li> <li>• 1-2 classes/year: 22.6%</li> <li>• 3-5 classes/year: 20.8%</li> <li>• 6-15 classes/year: 11.3%</li> <li>• More than 15 classes: 11.3%</li> </ul>
Were you aware that your state has a National Estuarine Research Reserve?	<ul style="list-style-type: none"> <li>• Yes: 45.3%</li> <li>• No: 54.7%</li> </ul>
From which web resources do you currently obtain estuary, watersheds, and coastal information for use in your classroom?	<ul style="list-style-type: none"> <li>• NOAA Education website: 39.6%</li> <li>• NERR system website: 15.1%</li> <li>• Estuaries.gov: 5.7%</li> <li>• NSTA Estuaries Science Guide: 7.5%</li> </ul>

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	<ul style="list-style-type: none"> <li>• Weeks Bay NERR: 3.8%</li> <li>• Grand Bay NERR: 13.2%</li> <li>• EPA website: 13.2%</li> <li>• Google: 58.5%</li> <li>• State government: 9.4%</li> <li>• National non-profit: 3.8%</li> <li>• Local non-profit: 9.4%</li> <li>• Other: 9.4%</li> <li>• I do not use web resources: 20.8%</li> </ul>
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Summary of required question findings:

- One third of the respondents do not teach about estuaries, watersheds, and coastal topics.
- The predominant supplementary training is Project WET.
- Almost 60% of the respondents have not completed any hours in estuary science in the last three years.
- Educators plan to place moderate emphasis on outdoor experiential activities; lab or field work/data collection; stewardship projects or activities; and data analysis, statistics, and probability.
- More than 50% of the educators plan to place heavy emphasis on scientific inquiry skills.
- The frequency of class or activity periods of estuary, watershed, and/or coastal instruction is fairly evenly distributed.
- Over 50% of the respondents were unaware that your state has a National Estuarine Research Reserve.
- Almost 40% of the respondents used the NOAA Education website to obtain estuary, watersheds, and coastal information for use in their classrooms.

*Evaluation Observation:* Several remarkable findings emerged: 1) the lack of teaching in estuaries, watersheds, and coastal topics; 2) the lack of training hours in estuary science; 3) the lack of awareness of NERRs in the respondents' state; 4) the majority of respondents use Google for their major web resource, and 5) over 20% do not use web resources. Although the data cannot be generalized across all middle and high school science respondents, they do present an opportunity for additional professional development trainings.

#### ***4.5. Extra Survey Items***

Although this item was not a NERR required question, it was placed on the survey as a follow-up to the survey item: Were you aware that your state has a National Estuarine Research Reserve? The item read: If "yes", have you ever used any of their educational services (example: a field trip) or products (example: curricula or publications)?

- Yes: 11.3%
- No: 88.7%

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*Evaluation observation:* An educational opportunity lies in this data, since only 11.3% of the respondents take advantage of Reserve resources.

In addition to required needs assessment items, the NERR system has charged the Reserves with 12 data requirements that are to be reported upon completion of the needs assessment process. Those data points are depicted in Table 10, below.

**Table 10. NERR Required Data Points**

<b>Required Data Point</b>	<b>Included in Weeks Bay NERR NA Surveys?</b>
Number of educators completing survey	✓
Importance of CEUs/PLUs	✓
Barriers to attending professional development offerings	✓
Types of professional development needed	✓
Projections: racial/ethnic groups	No*
Types of data used	Asked as separate item; see below
Connection to outdoors	No*
Estuary and Estuary-related topics	✓
What help do you need to incorporate more outdoor education in your classroom?	No*
Need for materials in a different language?	No*
What topics would you like to see developed into educational materials?	✓
What help do you need to incorporate more discussion about the effects of climate change on coastal areas in your classroom?	No**

- \*These data points were not pertinent to the purpose of the Weeks Bay needs assessment.
- \*\*Although this data point was not addressed, data from the Weeks Bay survey indicated an interest in climate change professional development programs. As a result, a climate change workshop was designed and implements in the summer of 2010.

One data point was converted into a survey item for the Mississippi cadre. Table 11 displays the findings from that item.

**Table 11. Which of these real-time/near-real-time data streams have you used in your teaching?**

<b>Data Stream</b>	<b>Not at all - %</b>	<b>Little - %</b>	<b>Frequently - %</b>	<b>Very often - %</b>
Algal blooms	71.4	18.4	8.2	2.0
Currents	54	36	10	0
Directional wave spectra	83.3	14.6	0	2.1
Dissolved oxygen	68	20	12	0
Fish species and abundance	55.1	32.7	8.2	4.1

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Ice concentration	<b>85.4</b>	14.6	0	0
Nutrients	<b>61.2</b>	22.4	<b>14.3</b>	<b>2</b>
Ocean color	<b>70.8</b>	22.9	6.3	0
Optical properties	<b>81.6</b>	12.2	6.1	0
pH	<b>52</b>	26	<b>16</b>	<b>6</b>
River discharge	<b>72</b>	16	12	0
Salinity	<b>51</b>	23.5	<b>19.6</b>	<b>5.9</b>
Sea level	<b>60</b>	28	10	2
Seafood contaminants	<b>62.5</b>	20.8	<b>16.7</b>	0
Temperature: air	<b>38</b>	36	<b>20</b>	<b>6</b>
Temperature: water	<b>46</b>	30	<b>16</b>	<b>8</b>
Topography/bathymetry	<b>60</b>	26	12	2
Turbidity	<b>66.7</b>	25	6.3	2.1
Vector currents	<b>81.6</b>	14.3	4.1	0
Water depth	<b>68</b>	20	10	2
Water contaminants	<b>51</b>	28.6	<b>12.2</b>	<b>8.2</b>
Water quality	<b>52</b>	30	12	6
Waves	<b>59.2</b>	18.4	<b>14.3</b>	<b>8.2</b>
Wind vector	<b>75.5</b>	16.3	4.1	4.1
Zooplankton species	<b>56.9</b>	31.4	9.8	2

*Evaluation Observation:* Real-time/near-real-time data streams are not used with any deal of frequency. The most common data streams used in teaching (>15% frequency) are nutrients, pH, salinity, seafood and water contaminants, air and water temperature, and waves. These data streams correlate with teaching topics related to the geographic and meteorological characteristics of Jackson County, Mississippi. It is surprising that other geography-related streams are infrequently taught, such as currents, fish species, river discharge, sea level, and turbidity.

#### ***4.6. The impact of a less than statistically significant sample size and the lack of a statistical validation of survey items***

*Sample size:* Despite the effort, the Mississippi survey did not result in an overall statistically significant sample size for middle and high school science teachers. Despite that, the Mississippi responses showed a high degree of correlation with the Alabama and Florida cadre. The data are still useful for demographic and professional development planning because of the high degree of correlation of the respondents, as well as a lack of any outliers from the Mississippi cadre.

*Statistical validation of survey items:* Had time permitted, the survey items would be subjected to a Cronbach alpha analysis for reliability and internal consistency. After consulting with statistical expertise at the University of South Alabama College of Education, it was determined that since the items were limited to collecting data on frequencies, subjecting the items to a test of inner-rater reliability would suffice for this evaluation.